

REMARKS/ARGUMENTS

Claims 1-13 and 16-20 are pending in the application. Claims numbered 14 and 15 were inadvertently omitted in the application as filed.

Claims 1, 13 and 16-20 of the application stand as being rejected with rejection in the case of claim 20 involving 35 U.S.C. 102 and the reference patent of White, U.S. 5,233,551 and the remaining claims rejected under 35 U.S.C. 103(a) in view of the reference patent of White in combination with the reference patent 5,963,164 of Tsui et al. Claims 1-13 and 16-20 are also rejected under the provisions of 35 U.S.C. 101 for "lack of practical/physical application or a useful and tangible result" in the language of at least independent claims 1, 10, 19 and 20.

In response applicants herein amend each of independent claims 1, 10, 19 and 20 to overcome the rejections under 35 U.S.C. 101, 35 U.S.C. 102 and 35 U.S.C. 103(a) and present related remarks of reasoning and argument for consideration.

Turning first then to the rejections based on the White reference patent, applicants understand the invention of this patent to concern a high speed signal processing arrangement involving the implementation of Fourier transformation mathematical functions in a mathematically precise but energy conserving manner, in particular radix-12 transformations. Even though the White reference concerns a Fourier transformation and possibly other details bearing similarity to applicants' invention, applicants submit differences between the White apparatus and the present invention are present and are significant with respect to the present discussion.

A first of these differences is concerned with the fact that each of applicants' rejected independent claims, claims 1, 10, 19 and 20 speaks of an approximated Fourier transformation realization in plural claim locations rather than of the more mathematically precise Fourier transformation as is discussed in the White reference patent. Applicants have discussed the present context meaning of such approximated Fourier transformations especially in the FIG. 3, FIG. 4 and FIG. 5 drawings and in the related specification text located in paragraphs [0051], [0054], [0055] through [0059] and [0062] for examples. Nothing identified in the White reference appears to disclose the use of approximated coordinate magnitudes and angle magnitudes in the real-imaginary plane representations of Kernel function realizations. Notably the "twiddle factor" in the White Kernel function is identified as a phase shift accommodation not an approximation, see White column 3, line 20 and column 6, line 46.

Another difference between applicants' claim recited invention and the disclosure of the White reference relates to applicants' recited optimizing of the Kernel function real-imaginary plane locations used in response to simplified computation advantages achieved. Yet another difference between applicants' claim recited invention and the disclosure of the White reference relates to applicants' recited optimizing of Kernel function real-imaginary plane representations according to spurious response advantages realized in the claim included radio receiver. Rejected claims 1 and 20 recite computation related optimization while claims 10 and 20 recite spurious response related advantages. Claim 20 may thus be appreciated to include both computational and spurious response recitations. Computational optimization is discussed in for example paragraph [0054] of applicants' specification; spurious response optimization is discussed in for example paragraphs [0060] and [0062] of applicants' specification.

Another difference between applicants' claim recited invention and the disclosure of the White reference relates to the twelve point or radix 12 Kernel function realization emphasized in the White disclosure, see column 1, line 8; column 4, line 66; column 5, line 39; column 15, line 36; column 18, line 1 in the White document. Even though the White text also speaks of radix 2 and radix 6 processing the ultimate goal of this processing and the entire invention appears to be achievement of a radix twelve Fourier transformation, column 4, line 65. Applicants' invention and rejected claims are not however limited to such a single Fourier transformation. Applicants' specification has in fact disclosed a 256 point Fourier transformation in paragraph [0065] and a plurality of intermediate size transformations in paragraph [0067] and its included table 1 data. Applicants' rejected claim 8 is concerned with a greater range of Fourier transformation measures, transformations not disclosed in the White reference.

Table 1 in paragraph [0067] also discloses the ultimate radio receiver dynamic range benefits provided using selected transformations of applicants' present invention. Such radio receiver dynamic range enhancements are also not disclosed in the White reference nor are the receiver dynamic range enhancements of the present application nature disclosed in the Tsui et al. U.S. 5,963,164 secondary reference patent. The Fourier transformation contemplated in the Tsui et al. U.S. 5,963,164 patent is in fact of a simple configuration as is describe in the lines commencing at column 5, line 58 of the specification in this patent. Thus the radio receiver enhanced dynamic range of the present invention also appears to be a significant distinction of the present invention over the references

identified in the Examiner's Action. Applicants' rejected claims 6 and 7 directly address dynamic range characteristics of the present invention.

Applicants also respectfully submit that the intended function of both the Tsui 5,963,164 patent and the present invention would be destroyed by teachings included in the White reference patent if the 35 U.S.C. 103(a) combination of references suggested in the Examiner's Action were accomplished. Neither of the referred-to Tsui 5,963,164 patent nor the present invention include for example the "twiddle factor" or the associated square root of 3 factor in their algorithms. As disclosed in the abstract and the language of the White paragraph commencing at column 3, line 34 for examples these factors appear to be important parts of the White processing.

The dependent claims of the instant application are respectfully submitted to be carried as to patentability by at least the parent independent claim considerations discussed herein. Modifications to certain of the related dependent claims are however made herein as needed for antecedent language purposes.

In conclusion applicants respectfully submit that the present invention rejections based on 35 U.S.C. 102 and 35 U.S.C. 103(a) are somewhat less than well founded and are hence appropriate for reconsideration. Such reconsideration and allowance of the thusly rejected claims are respectfully solicited.

With respect to the 35 U.S.C. 101 rejection recited in paragraphs 2 and 3 of the Examiner's Action, applicants have herein provided both radio frequency receiver and receiver characteristics improvement amended language believed to incorporate "a practical/physical application and a useful and tangible result" into each of independent claims 1, 10, 19 and 20 of the instant application. This language is included in both preamble and claim body portions of each claim. Notably original claim 19 already includes such radio frequency radio receiver language however additional related language has nevertheless been herein added to this claim. Applicants respectfully submit that this same radio receiver language in each independent claim provides even additional distinction over the White reference patent since such "practical/physical application and useful and tangible result" in a radio receiver are not found in the White document.

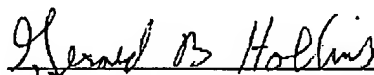
Applicants have herein added new claims 14 and 15, claims made dependent on parent claim 10 and replacing the Examiner noted missing claims 14 and 15 of the filed application. New claims 14 and 15 bear notable similarity to other dependent claims

included in the filed application and thereby hopefully limit the additional effort required by the Examiner.

Since filing of the instant application in the U.S. Patent and Trademark Office applicants have learned of the existence of U.S. Patent 4, 839,844 of Watari, a patent also appearing to have relevance to the Fourier transformation and Kernel function concepts appearing in the present invention. Applicants therefore include the enclosed supplemental disclosure statement formally identifying this document.

A reconsidered allowance of all claims in the application and passage of the application to issuance are respectfully solicited.

Respectfully submitted,



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